

ABSTRACT OF THE DISCLOSURE

The use of complex fluoride ions of elements of groups 4, 13, or 14 of the periodic table of the chemical elements (preferably selected from complex fluoride ions of the elements B, Si, Ti, and Zr) in concentrations from 30 to 500 millimoles per liter in process solutions for pickling steel or for bleaching and/or passivating pickled surfaces of stainless steel; a process solution for pickling steel or bleaching and/or passivating pickled surfaces of stainless steel comprising: a) one or more strong acids, b) one or more oxidizing agents in the bleaching/passivating process, c) complex fluoride ions of elements of groups 4, 13 or 14 of the periodic table of the chemical elements in concentrations from 50 to 500 mmols per liter; replenisher or concentrate containing a combination of active substances thereof; a process for pickling steel or for brightening and/or passivating of pickled surfaces of stainless steel, wherein the surfaces are brought into contact with such a process solution.